Environmental Assessment
Marsh and Walsh Creek Restoration

Seney National Wildlife Refuge
Seney, Michigan

Cover Photograph: **Walsh Ditch has been draining Refuge wetlands for 86 years. Restorations proposed in this assessment will restore water to wetlands, creeks and a river impacted by Walsh Ditch**

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1.1 Purpose

The purpose of the project is to restore the hydrology and ecological integrity of the wetlands and streams that have been affected by the drainage of Walsh Ditch.

1.2 Need

Action is needed to stop the ongoing damage to wetlands affected by the Walsh Ditch and to comply with legal mandates and U.S. Fish and Wildlife Service (USFWS) policies.

Wilderness Act

The Walsh Ditch drains wetlands for six miles within Seney National Wildlife Refuge's Congressionally designated Wilderness Area. The Wilderness Act of 1964 defines wilderness "as an area where earth and its community of life are untrammeled by man,..... an area of undeveloped Federal Land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable....." The Wilderness Act and USFWS Wilderness Management Policy clearly compel the USFWS to restore the hydrology of the area to natural conditions. Additional information and the complete text of both the Wilderness Act and USFWS Wilderness Management Policy can be found at www.wilderness.net.

Improvement Act of 1997

In the National Wildlife Refuge System Improvement Act of 1997, the Secretary of Interior was directed to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans." The USFWS has developed a policy to comply with the act. Throughout the policy there are references to restoring degraded habitats:

> "we will restore lost or severely degraded elements of integrity, diversity, environmental health at the refuge scale,"
>
> "we favor management that restores or mimics natural ecosystem processes or function to achieve refuge purposes,"
>
> "the highest measure of biological integrity, diversity, and environmental health is viewed as those intact and self-sustaining habitats and wildlife populations that existed during historic conditions."

Historic conditions are defined as "composition, structure, and functioning of ecosystems resulting from natural processes that were present prior to substantial human related changes to

the landscape." USFWS policy in complying with the Act supports and encourages the restoration of natural hydrology that maintains wetland conditions. The full text of USFWS policy on Biological Integrity, Diversity and Environmental Health can be found at www.fws.gov/r9pdm/home/newfrnotice.html .

Protection of Wetlands, Executive Order

Executive Order 11990, Protection of Wetlands, requires Federal agencies to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural beneficial values of wetlands in the conduct of agency responsibilities. USFWS policy in complying with the Executive Order is to: 1) avoid adverse effects caused by the human modification or occupancy of wetlands and to: 2) restore, preserve, and enhance the natural and beneficial values served by wetlands. The Order supports restoration of the hydrology along Walsh Ditch. For a complete text of USFWS policy concerning compliance with Executive Order 11990, visit
http://www.fws.gov/directives/613fw2.html .

1.3 Decisions that Need to be Made

The Regional Director will use this environmental assessment to select an alternative and will determine if the selected alternative requires an Environmental Impact Statement (EIS), or if the preferred alternative results in a Findings of No Significant Impact (FONSI).

1.4 Background

The Seney National Wildlife Refuge was established in 1935 for migratory birds and other wildlife. In 1942 one of the Refuge's major waterfowl impoundments, the C-3 Pool was constructed adjoining the Walsh Ditch to the west. Water levels in C-3 Pool are managed to provide feeding and nesting habitat for waterfowl, bald eagles, common loons, sandhill cranes, black terns, and trumpeter swans. Walsh Ditch drains into and out of the west end of the pool. Water from the Ditch maintains the wildlife values of the C-3 impoundment.

In 1991 the refuge identified the main C-3 Pool water control structure as needing replacement. The structure has discharged the water flowing in the Walsh Ditch during high flow periods in the spring for 59 years. As part of planning for the structure replacement, a review was conducted on the hydrology of watershed and the impacts of how water has been managed on the Refuge. As a member of the Manistique River Watershed Partnership, the Refuge was interested in maintaining and improving the quality of the Manistique River. All the watersheds involved are tributaries of the Manistique River. On-site visitation provided detailed information concerning the current condition of the watersheds. A sense of its historical functioning was obtained from a series of aerial photographs of varying date and scale. It became clear that just

a replacement of the existing structure, and operating the replacement as had been done for 59 years, was not acceptable. An ecological landscape approach was developed to replace the function of the structure in such a way that restored natural hydrological processes. This environmental assessment will evaluate a landscape approach to water management in the C-3 Pool watershed, and recommend a proposed action that will restore water to drained wetlands along Marsh and Walsh Creeks and the Driggs River.

2. Alternatives, Including the Proposed Action

2.1 Alternatives not Considered for Detailed Analysis

An alternative not considered for detailed analysis is the removal of C-3 Pool from the watersheds involved. Operation of the pool for wetland dependant wildlife requires some water be diverted from both Walsh and Marsh Creeks. A primary purpose for establishing the Seney National Wildlife Refuge was for "migratory birds." The C-3 Pool was built to benefit migratory birds in support of the primary purpose. C-3 Pool has benefitted tens of thousands of ducks, geese, bald eagles, loons, terns and other migratory birds since it was built in 1942. Removal of the pool would not be compatible with refuge objectives and primary purposes, and its removal will not be considered an option or alternative.

2.2 Alternatives Carried Forward for Detailed Analysis

2.2.1 Alternatives A (Proposed Action)

Restoration of flows in historic stream channels of Marsh and Walsh Creeks.

The proposed alternative involves returning the flow of water to both historic channels of Marsh and Walsh Creeks. Both stream flows were cutoff with the digging of the Walsh Ditch. Three new water control structures are needed and several ditch plugs installed to complete the stream flow restorations. Ditch plugs will be placed in the Ditch above C-3 Pool and below the spreads area south of C-3 Pool. Due to water needed to maintain wildlife values at C-3 Pool, stream flow, at times, will be diverted from Walsh Creek into the pool to maintain pool water levels. (See Appendix1 for map showing site locations of restoration activities.)

Walsh Creek

At the Walsh Ditch beginning (Site 1) at M-28, flows will be diverted out of the Ditch and back into the historic creek channel with the permission of the private landowner. All sites described in this assessment are within the boundaries of the Refuge, except Site 1. If the landowner of Site 1 is not willing to reconnect the creek on their property, then restoration work will begin at Site 2. One mile downstream (Site 2), the Ditch will be plugged and flows will be returned to the next 2 ½ miles of stream channel. At the terminus of Walsh Creek with the Driggs River (Site 3) two water control structures are needed. See Appendix 2 for map of both structures proposed.

The main Walsh Creek structure will pass high flows directly into the Driggs River which is approximately 100 yards from the site. When flows drop below a certain elevation, water can continue to flow into the Driggs or be stopped and diverted to a second structure. This second structure will permit lower flows to be directed into C-3 Pool to maintain water levels. For the past 59 years, the C-3 Pool has been maintained by flows from Walsh Ditch. Its design and operation have depended upon inflows from the Ditch. Only when water levels are below those planned for the pool, will water be diverted into C-3 Pool. Water levels planned vary from year to year based on annual objectives and can, in some years, involve partial drawdown or holding levels at their maximum.

Table 1. Peak Discharge cfs (cubic feet per second)

Location	Drainage Area (Square Miles)	10-year (cfs)	25-year (cfs)	50-year (cfs)	100-year (cfs)
Total Watershed	48.8	448	504	552	591
Marsh Creek at WCS[b]	14.6	137	154	169	180
Walsh Creek at WCS	34.2	315	354	388	414

[a]From Barr Engineering report titled "Hydrologic and Hydralic Analysis, 2/16/2001
[b]WCS - water control structure

Marsh Creek

To return flow to the historic Marsh Creek channel one water control structure needs to be built, several ditch plugs installed, operation of an existing structure changed and a diversion channel dug to bypass the Ditch. At Site 4 a ditch plug will divert flows back into the historic channel. At Site 6, a structure will be built that has the capacity to handle flows that duplicate the inflows into C-3 Pool from Marsh Creek. This structure will discharge the same high flow rates into the historic channel below C-3 Pool as is received into the Pool. At Site 7 the Ditch makes a 90 degree run from east/west to due south. At this right angle corner the Ditch intercepts the creek. A ditch plug in the Ditch and a channel dug to reconnect the creek channel to itself will be needed to restore the flow downstream. See Appendix # 3 for a map of the site.

At the main water control structure (Site 5) of C-3 Pool, changes need to be made in its operation. For the past 59 years, the structure has discharged all of the flow into C-3 Pool that was excess to planned water levels. All of the flow of both creeks has been diverted into the Ditch and into C-3 Pool. This one structure discharged all peak flows directly back into the Ditch. These past high flows have caused severe erosion 1 1/2 miles downstream in an area known as the spreads. This erosion has cut into the underlying water bearing sands as much as

15 feet below the surrounding land surface. The eroded channels in the spreads area are a major source of groundwater discharge and cause of lower groundwater levels. The water control structure at Site 5 will no longer be used except in an emergency. The restoration of high flows in both creeks will make use of the Site 5 structure unneeded. If for any reason one or both restored creek flows fail, the Site 5 structure can serve as an emergency spillway. Stopping the discharge of this large structure will stop the annual erosion in the spreads and permit beaver to build dams and capture some of the groundwater being discharged into and down the Ditch.

In addition to the above, ditch plugs or dams are needed between Site 2 and Site 4, between Site 7 and 8, and between Site 7 and 9. Without the plugs, the ditch will continue to be a source of groundwater discharge and result in lower than natural groundwater levels. Plugs will serve as dams capturing groundwater discharge. With plugs in the ditch, it will fill with water until the pressure of the water is equal to the groundwater discharge. Once an equilibrium is achieved, the ditch will become a series of impoundments and groundwater levels should return to natural levels. In the 2 3/4 miles of Ditch between Site 2 and 4, there is a drop in elevation of about 20 feet or 7 feet per mile. A total of five ditch plugs will be installed with one every 1 /2 mile or a drop of 4 feet. The plugs should impound at least 6 feet of water at the plug site and fill the ditch with water to the point of equilibrium with the groundwater.

In the 2 miles of Ditch, between Site 7 and 8, there is a drop of 10 feet in elevation requiring at least two plugs. Prior to installing plugs in the Ditch within the Wilderness Area, beaver will be given an opportunity to dam the groundwater discharge. If after two years, beaver have not stopped the flows in the Ditch, plugs will be installed where adjacent borrow material still exists.

In the 5 miles between Sites 7 and 9, there is a drop in elevation of 30 feet. Between these sites, there are several existing beaver dams. A total of 6 plugs will be required to stop ongoing groundwater discharge that is not being stopped by beaver dams.

2.2.2 No Action Alternative

See Part 3 (on page 6) for a complete description of the no action alternative.

A no action alternative would involve a continuation of water management practices of the past 59 years. Groundwater loss from wetlands would continue. Erosion cutting in the ditch channels of the spreads would get worse each year. The Driggs River would continue to be a modified river that does not experience flooding episodes. Wildfires would be expected to cause more extensive damage to organic soils than would be expected under natural groundwater conditions.

2.2.3 Alternative C.

Restoration of flows in historic stream channels of Marsh and Walsh Creeks and the removal of Walsh Ditch.

Alternative C would in addition to the actions proposed in Alternative A (the proposed action) involve the physical removal of as much of the Ditch as possible below C-3 Pool, where adjacent spoil banks are present. They would be used to fill in the Ditch. Where spoil banks have eroded away, steel sheet piling would be used to dam the Ditch and stop groundwater discharge.

In the first 1½ miles below C-3 Pool, the Ditch still follows its original channel although it is currently about 60 feet wide and up to 8 feet deep. Spoil banks have long since eroded downstream. Beaver maintain a series of dams in the section and have stopped groundwater discharge into the Ditch. Sheet piling would not serve any useful purpose as long as beaver maintain their dams.

The Ditch section know as the "spreads" starts 1½ miles south of C-3 Pool and is about a mile long. It is a major source of groundwater loss. Within just that one mile section of the spreads, at least 200,000 cubic yards of sand and peat soils are estimated to have eroded downstream in the Ditch since 1915. That quantity of material is enough to cover a football field (100 yards long by 80 yards wide) 75 feet deep. In the spreads, there are no spoil banks present and sheet piling dams are the only option. With a drop in elevation of 10 feet and a channel depth of up to 15 feet, several rows of sheet piling are necessary to stop all groundwater discharge. A total of 8 rows of 20 foot sheet piling 50 feet wide would be required to dam all channels in the spreads.

From Site 8 at the south end of the spreads to Site 9 near the southern refuge boundary, the Ditch drops 40 feet in elevation. In the 7 miles between the two sites, most spoil banks have eroded and moved downstream leaving little borrow material available to fill in the Ditch. For 6 out of 7 miles, sheet pilings would be used to stop groundwater discharge. A total of 12 dams would be installed in these 6 miles each 50 feet wide using 20 foot piling. For the 7th mile, spoil banks would be moved back into the Ditch channel. Currently there is a beaver dam about every mile between Sites 8 and 9.

3. Affected Environment

3.1 Physical Characteristics

Within the Refuge, the Marsh and Walsh Creek watersheds lie between the Driggs River to the east and the Creighton River to the west. It is approximately 7 to 9 miles between the 2 rivers. See Appendix # 1 for a map of the watersheds. The area between the rivers is a vast nearly level sandplain with a gradient of 6 to 12 feet per mile grading from northwest to the southeast.

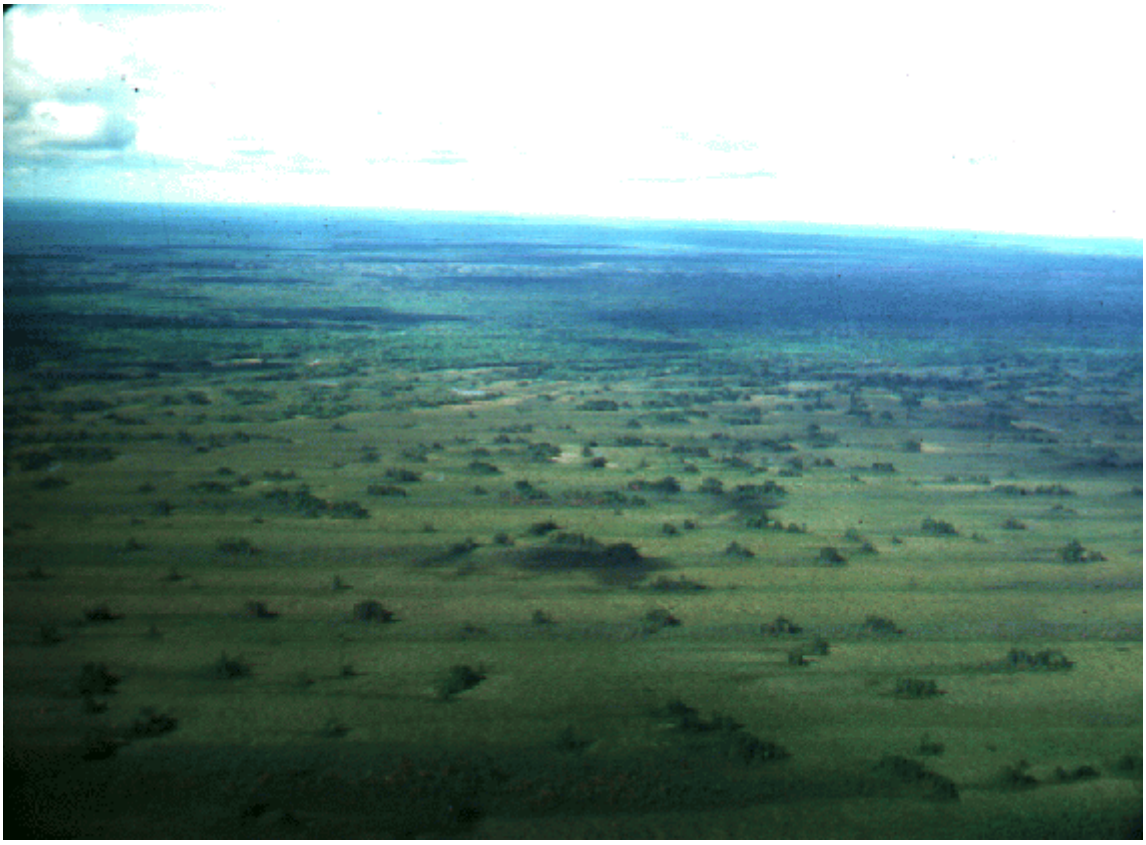
The sandplain was created by the deposition of glacial outwash as the last glaciers receded. A continuous peat blanket several feet thick covers most of the sandplain. The sandplain peatlands are interrupted by thousands of sand knolls which have caused the creation of patterned fens and bogs. This patterned organic terrain is the largest in Michigan and marks the southern limit of patterned peatlands in North America.

The conditions that created these vast peatlands and the topographic alignment of vegetation involve the movement of water across the nearly level landscape. Water levels either above the ground surface or near it created the conditions that permitted organic soils to form from the wetland plants present. The peatlands developed since the glaciers receded between 4,000 to 9,500 years ago.

During snowmelt in spring, the area between the rivers appears to be a shallow lake with water slowly moving to the southeast. During the runoff period, ground water levels are recharged, the peatlands absorb water and slowly release the runoff. These hydrological processes have been at work for thousands of years creating the vast peatlands of the refuge.

On April 14, 1911, the Newberry News reported "The largest drainage project ever undertaken in the United States, under private auspices, has been initiated in the Upper Peninsula of Michigan." The Western Land Securities Company of St. Paul intended to "throw on the market for cultivation nearly a million acres of the richest black muck soil to be found in the state." Ditches were dug " 20 feet wide at the top, 16 feet wide at the bottom and 7 feet deep, with a fall of 6 feet to the mile." By the time the "Big Ditch" was reported finished in 1915 the land development project began to fail. Land that was sold proved impossible to farm and the development became known as the "Great Seney land swindle." Most of the land could not even generate enough income to pay property taxes and reverted to the State of Michigan. The Seney National Wildlife Refuge was established in 1935 in the area of the "Big Ditch."

Today the "Big Ditch"is known as the Walsh Ditch. It runs 17 miles through the western half of the refuge from north to south. It was dug through the center of a large patterned wetland and cuts off stream flows in Marsh and Walsh Creeks. The 20 foot wide, 7 foot deep ditch has been much more successful at draining wetlands than the development company was in making a profit.



Patterned vegetation of the Strangmoor Bog National Natural Landmark within the Refuge's Wilderness Area.

General Ditch Impacts

For the past 85 years, the Walsh Ditch has had a range of adverse impacts on the wetlands along its 17-mile course through the refuge. These negative impacts include:

1. Lowering of groundwater levels.
2. Changes in vegetation communities due to lower groundwater levels.
3. Dryer peat soil conditions permitting the decay or loss of peat from oxidation.
4. Dryer peat soil conditions that permit wildfires to completely consume organic soils.
5. Sheet flow movement of surface waters has been intercepted by the Ditch.
6. Seasonal flooding of wetlands from streambank overflows has been interrupted by the Ditch.
7. The magnitude of seasonal flooding along the Driggs River is reduced by approximately one half.
8. Plant species richness, productivity, and diversity are reduced in the riparian zone along the Driggs River due to a lack of flooding episodes.

9. The channelized and focused discharge of large volumes of water in the Ditch has caused severe erosion of surface peat soils and underlying sands.
10. More sand sediments reach the Manistique River via the Ditch than would be expected from the natural flows in Marsh and Walsh Creeks and the Driggs River.
11. Beaver are less able to effectively dam water flowing in the Ditch versus natural creek channels flowing through lower lying wetland habitats.

Walsh Creek Watershed

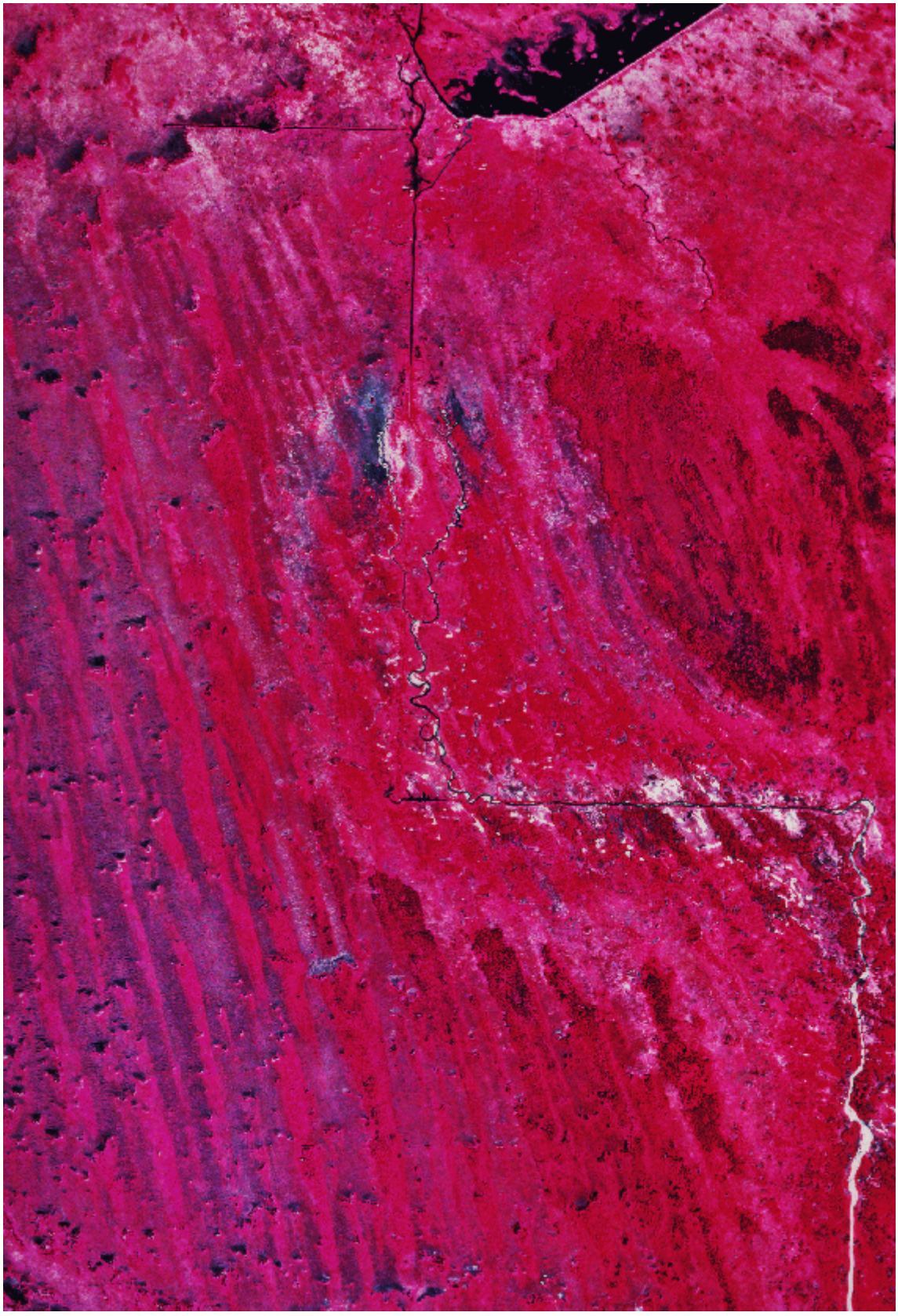
The Walsh Ditch begins approximately 10 miles west of the town of Seney on Highway M-28. It cuts off the southeasterly flow of Walsh Creek in two locations within the first mile. Other drainages and sheet flows to the southeast are also stopped by the spoil bank created. All surface flows are diverted into the south flowing ditch. During the low- water period of summer, groundwater continues to discharge into the Ditch and lowers groundwater levels in wetlands adjacent to it.

The Ditch cuts off the last three miles of Walsh Creek as it terminates into the Driggs River. Walsh Creek on average carries between 45 and 57 percent of the flow of the Driggs. During high flows, the flow in the Ditch approaches 75 percent of the Driggs flow. Due to the diversion of Walsh Creek into the Ditch, flows in the Driggs have been significantly reduced. Since 1915, flooding episodes of the riparian zone along the 15+ miles of the Driggs River have been rare. Other river processes involving sand sediment movement have also been reduced by the Ditch.

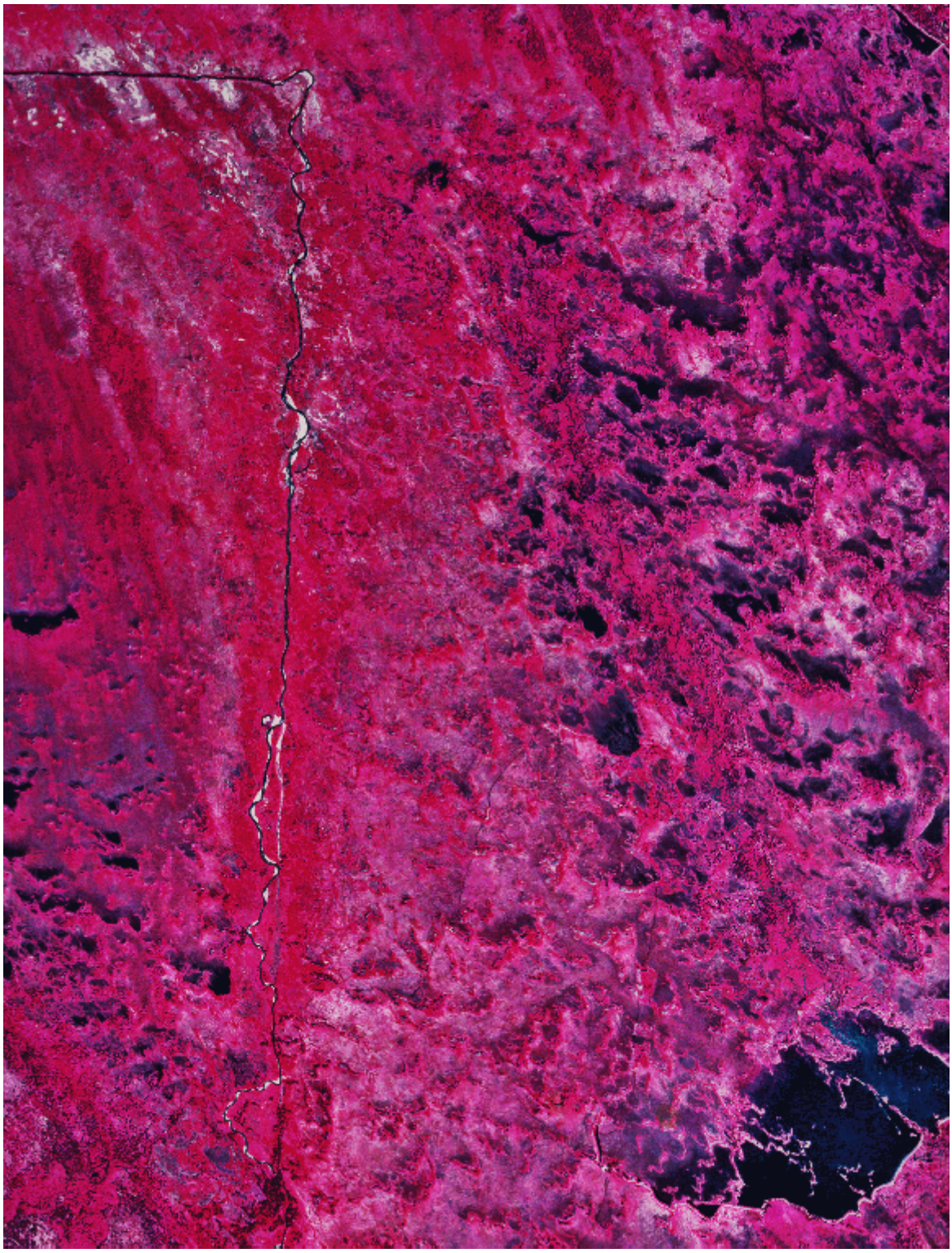
Marsh Creek Watershed

The Marsh Creek Channel is intercepted by the Ditch 4 miles south of its beginning and again 5 miles further south. An impoundment C-3 Pool, built for waterfowl, was constructed in 1942 adjoining the ditch. Water from the Ditch maintains water levels in the Pool. Water excess to the needs of the Pool are discharged back into the Ditch. During peak flows, the C-3 Pool discharge has caused severe erosion for miles south of the Pool. The erosion damage has cut into the ground up to 15 feet below the surrounding ground surface. The Ditch has caused adjacent groundwater levels to be lowered for many miles below C-3 Pool. Prior to drainage the vegetation south of C-3 Pool consisted of patterned fens just as the area southwest of the Pool remains to this day. Aerial photographs from 1930 clearly show the distinct vegetation patterns in the area south of C-3 Pool.

Sheet flows of surface waters flowing to the southeast are interrupted along the entire length of the Ditch south of C-3 Pool for approximately 10 miles. The loss of sheet flows contributes to reduced water recharge of affected wetlands to the southeast.



This infrared National High Altitude Photograph (NHAP) taken 6/9/87 shows the patterned nature of the Wilderness and the effects the Walsh Ditch has had on the landscazpe. C-3 Pool is located at the top of the photo.



An infrared National High Altitude Photograph (NHAP) taken 6/9/87 showing the five miles of Marsh Creek below Site 7. Marsh Creek Pool is located in the lower right of the photo.

'ig. 16. Interpretation of LANDSAT scene (11 May 1977) for degree of burn on a relative scale (0 indicates a complete burn and 4 a light burn).

Fig. 17. Interpretation of LANDSAT scene (9 August 1977) for relative vegetation recovery zones combined with burn boundary information (0's indicate areas where no vegetation recovery could be detected and 4's indicate sufficient recovery to make delineation from unburned areas difficult).

From Anderson's 1982 report on the "Effects of the 1976 Seney National Wildlife Refuge Wildfire on Wildlife and Wildlife Habitat." Note the areas of complete burn are located along Walsh Ditch. The organic soils along the Ditch were the only soils completely consumed by the wildfire.

Recent aerial photographs show a dramatic change in vegetation southeast of the Ditch. The once open patterned fens are changing to wetland forests of tamarack, black spruce, red maple and tag alder that require somewhat dryer conditions.

Lower groundwater levels along the Ditch have made the adjoining organic soils much more susceptible to damage from wildfires. During a severe drought in 1976, a wildfire burned much of the refuge. The only areas where the organic soils were lost or completely consumed were along the Ditch. Peat soils unaffected by the Ditch remained wet enough to resist severe fire damage.

In 2000 Kurt P. Kowalski completed a masters research project titled: "Analysis of Wetland Plant Communities and Environmental Conditions: A Wetland Restoration Project in Seney National Wildlife Refuge." The study examined the degradation of the Marsh Creek wetlands caused by alteration of the natural hydrology. Wetlands along the Creek were sampled to characterize the plant communities present in both unaltered conditions and

altered sites. Other researchers have examined the impacts of drainage and river water-level regulation to plant species richness. (Nilsson, 1991) They found that drainage and restricted river levels cause an overall decrease in plant species richness when compared to free-flowing rivers or unaltered wetlands.

Kowalski's study found similar differences between unaffected wetlands upstream of C-3 Pool and those altered wetlands below C-3 Pool. The unaltered site had higher wetland plant species richness and a higher plant quality index value when compared to altered wetlands below C-3 Pool.

The U.S. Geological Survey, Water Resources Division collected hydrological data between fall 1998 and spring 2000. The study was done to document existing conditions and to assess potential changes in hydrology that might occur with modifications to water management in the C-3 watershed. Their report "Hydrology of C-3 Watershed, Seney National Wildlife Refuge, Michigan" provides a water budget for the watersheds affected by the Walsh Ditch. Minimum and maximum measured inflows and outflows for the study period are reported. Based on the water budget developed, restoration of the natural hydrology has been planned and flows in historic stream channels restored. The report is included as Appendix 4 in this assessment.

A basic understanding of the hydrologic systems at work in the two watersheds is helpful in appreciating the impacts of the Ditch and why restoration of historic flows is desirable. When the Walsh Ditch was dug, significant changes were made to the hydrological systems of both Marsh and Walsh Creek watersheds. The hydrologic variables present include the available power of water to do the work, and channel conditions which involve width, depth, slope, shape and sinuosity or meandering nature.

The available "power of water to do work" is the ability of a stream to erode banks, move and deposit eroded sands downstream and to cut deeper into the bottom of a stream. The power available to a water to cause erosion is a direct result of the discharge of water and the slope of the channel (Wiley & Seelbach, personal communication, 2001):

Water Power = Discharge of water X slope

Discharge is measured in cubic feet (or cubic meters) of water passing a given point in one second or cubic feet per second (cfs) or cubic meters per second (m^3s). Slope for both watersheds is approximately 6 to 10 feet per mile from the northwest to the southeast.

Prior to the Ditch being dug, the power in both stream channels was low due to spring runoff flowing overland adjacent to the channel. The discharge of water was spread over a wide vegetated area. With the digging of the Ditch, the discharge of water was funneled or focused into the Ditch. The power of the water to do work was significantly increased within the Ditch. Meanders are not present in the Ditch to reduce the slope effect. The focused water power over the past 86 years has eroded and moved large quantities of sand downstream to the Manistique River. The focused power has also lowered the channel bottom causing increased groundwater loss and an increase in the slope of the channel, which creates additional power.

Refuge Volunteer Everett Collier measuring groundwater discharge flowing out of the spreads area of Walsh Ditch. The spreads are a major source of groundwater loss in the Wilderness.

The "20-foot wide, 7-foot deep Ditch" is now up to 60 feet wide and 15 feet deep in sections with the difference thought to be in the Manistique River. Available focused water power has moved a tremendous quantity of sand down the Ditch.

The diversion of Walsh Creek into the Ditch has affected the Driggs River. The river is a highly meandering stream that carries a heavy bedload of sand. The Walsh Creek diversion has resulted in a 75% reduction of spring flow in the Driggs River. When the flow is returned to the creek and river, the power of the river's water will return. Increased cutting of banks, a deepening of the channel and an increase in the deposition of sand bars are expected. Overland flows in the riparian zone adjacent to the channel will restore flooding to floodplain plant communities.

A natural equilibrium or balance will develop between the power of the river and "the work available to do" (movement of sand bedload). The river will become a more active and dynamic system as it once was. Sand bedload movement from the Driggs River into the Manistique River should be considerably less than the current bedload entering the Manistique River due to Walsh Ditch. Sand movement down the Walsh Ditch will be stopped with the restorations proposed. (Wiley Seelbach, personal communication, 2001)

Within the Refuge, the Driggs River is a highly meandering stream with a heavy bedload of sand. For the past 86 years, it has flowed at approximately ½ of its historic peak spring flows. With the proposed restorations over 15 miles of refuge river will return to historic flows. It will once again be a dynamic force on the landscape.

3.2 Biological Environment

3.2.1 Habitat/Vegetation

Walsh Creek Watershed

Vegetation within the Walsh Creek watershed is comprised of a diverse mosaic of communities. Bands of open sedge grass follow some of the wetter drainages to the southeast. Dense thickets of tag alder and willow dominate for more than 3 miles along the historic Walsh Creek channel. Adjacent to the riparian zone along the creek, a wide variety of habitats can be found. Aspen, paper birch, red maple, and white spruce are common in mixed species stands. About midpoint in the 3-mile run of the creek channel, a stand of eastern hemlock dominates. The area just north of the creek is a designated "Hemlock Natural Area." Other major plant communities in the watershed include red, white, and jack pine on the dryer sites.

Marsh Creek Watershed

Habitat conditions in the Marsh Creek watershed south of C-3 Pool are dominated by topographically orientated patterned wetlands. Sand dune islands are scattered throughout the area and are dominated by red and white pine. Directly southeast of these islands are strips of larch, bog birch, and red maple. In between the strips of larch and birch are wetter more open grasslands dominated by sedge. These open patterned peatlands were the dominant community south of C-3 Pool prior to the Ditch being dug in 1915. With drainage, the peatlands began to be invaded by trees east of the Ditch. Aspen, red maple, larch, willow, cedar, and tag alder now dominate many of the once open patterned peatlands. The pattern of these openlands can still be seen on aerial photographs after 86 years, but their character is fading.

3.2.2 Threatened, Endangered, and Candidate Species

Gray Wolves

The gray wolf, a federally threatened species inhabits the restoration area. Observations of wolf tracks in the Walsh Creek watershed are common. Due to the frequency of track observations it is assumed the watershed is within a pack territory. The anticipated increase in beaver dams along the restored Walsh Creek should provide wolves with an additional forage base in an area where beaver have been lacking for 86 years. Deer are frequently observed in wetlands on the Refuge foraging on submerged aquatic plants and avoiding biting insects. Beaver dams will not eliminate deer use of dammed areas and should enhance use to both deer and wolves.

The Marsh Creek watershed was utilized by 2 wolves in 2000. Aerial observations were frequently made of a pair of animals south and west of C-3 Pool. Impacts of proposed restoration on wolves should be similar to those covered in the above paragraph on Walsh Creek.

Bald Eagles

The federally threatened bald eagle nests on C-3 Pool. Eagles have nested on the pool for over 50 years. Water levels are managed to maintain viable fish populations for both eagles and loons. Partial drawdowns are periodically conducted in spring and early fall for shorebirds, sandhill cranes and waterfowl. Levels are not lowered to the point where fish populations are impacted. The proposed action identifies, as a priority the maintenance of C-3 Pool water levels for wildlife. There will be no impact to eagles from the proposed action.

3.2.3 Other Wildlife Species

The USFWS, Great Lakes Region, developed Resource Conservation Priorities which identifies species considered to be in the greatest need of attention under the USFWS's full span of authorities. The list was developed to prioritize and focus programs and activities. Several species on the list are expected to benefit from the proposed restoration and none will be harmed. Listed species include: gray wolf, American bittern, least bittern, wood duck, black duck, mallard, blue-winged teal, yellow rail, sedge wren, and brook trout. All of these species

are expected to benefit from the restoration of hydrology, increased beaver activity and more open conditions.

3.3 Land Use

Land use priorities for the two watersheds involve: 1) compliance with the Wilderness Act in managing the Wilderness "as an area where earth and its community of life are untrammeled by man;" 2) maintain the wildlife values of the C-3 Pool impoundment; 3) and to comply with the National Wildlife Refuge System Improvement Act which requires that "the biological integrity, diversity, and environmental health of the system is maintained for the benefit of present and future generations of Americans."

Restoration of the two watersheds as proposed is compatible with the above three Refuge land use priorities.

3.4 Cultural/Paleontological Resources

There are no known cultural or paleontological resources present within the two watersheds that will be affected by the proposed actions. Construction activities required to build the three water control structures will take place on disturbed dikes. The sites were buried with sand spoil material in the early 1940's. Sand plugs in the Walsh Ditch will be from spoil banks created in the 1915 era as the Ditch was dug. A cultural resources impact from proposed action will be the plugging of the draining effect of the "historical"Walsh Ditch. The Ditch will remain on the landscape but its function of draining wetlands will be eliminated.

3.5. Local Socio-Economic Conditions.

Several local impacts to socio-economic conditions are anticipated from the proposed action. The impacts involve timber values, recreational fishing and water quality and quantity. Values impacted include:

-red pine and jack pine along Walsh Ditch may be damaged or adversely affected by a return of natural groundwater levels. Plugs in the Ditch will return groundwater levels to those experienced before 1915.

-construction activities will involve a contract estimated at $1,000,000. Some contract dollars should benefit the local economy from the purchase of supplies, materials, equipment rental and perhaps labor.

-sports fishery quality in the Driggs River should improve with the restoration of historic water flows.

-water quality should improve in the Driggs River with historic flows moving stream bedloads into the riparian zone and flushing some accumulated sands downstream. Water temperatures should decrease and volume increase.

-less total water will reach the Manistique River during peak spring runoff and will be stored in wetlands along both watersheds.

4. Environmental Consequences

4.1 Alternative A (Proposed Action)

4.1.1 Habitat Impacts

Impacts to habitat from the proposed action for both Marsh and Walsh Creek watersheds include:

-increased beaver activity which will flood and kill trees involving an unknown number of dams.

-an initial flush of 86 years of accumulated debris and fine sediments into the Driggs River from the historic Walsh Creek channel.

-vegetation adjacent to the Ditch and creek channels will be affected by the return of natural and higher groundwater levels.

-increased water power in the Driggs River will increase bedload movement within the floodplain, with more cutting of banks and deposition of sandbars expected.

-less total water will reach the Manistique River and more water will be stored in groundwater and utilized by wetlands.

-possible exposure of gravel beds in the Driggs River from increased flows moving sand off covered gravel.

-considerably less sand bedload will be deposited in the Manistique River when compared to the no action alternative.

-erosion of spoil banks along Walsh Ditch will be reduced and eliminated for most of the Ditch's 17-mile course through the Refuge.

-reduced loss of organic soils from oxidation and wildfires.

-the use of mechanized equipment (bulldozer and excavator) in a designated Wilderness Area to install ditch plugs and reconnect Marsh Creek channel to itself at Site 7 and between Sites 7 & 8 and 8 & 9.

The biological integrity of the wetlands and stream courses affected by the Walsh Ditch will be restored to historic conditions with this alternative.

4.1.2 Biological Impacts

Biological impacts of the proposed action follow the impacts to habitat discussed above and include:

-increase in beaver activity will have benefits to wetland dependant wildlife species such as waterfowl, American bitterns, rails, and sandhill cranes.

-improved brook trout spawning habitat in the Driggs River due to a potential increase in exposed gravel beds.

-improved brook trout habitat in the Driggs River due to increased depth of channel, deeper hole depth and a decrease in water temperature.

-flooding of Driggs River riparian zone will enrich plant communities.

-an increase in wetter open habitats should benefit northern harriers, sedge wrens, yellow rails, Leconte's sparrows, sandhill cranes and sharptail grouse.

-an increase in bedload deposition and sand bar formation should increase suitable nesting habitat for wood turtles.

4.1.3 Listed Species

Listed species that inhabit the project area are the gray wolf and bald eagle.

Wolves:

The proposed action will have no effect on wolves. Due to the large landscape nature of wolf pack territories (100 square miles +), restoration of stream flows and plugging Walsh Ditch will have no effect on wolves. Increased beaver activity should increase beaver numbers available to wolves. Any loss of upland deer habitat from beaver ponds will be offset by increases in underwater plant forage and use of beaver ponds by deer to escape biting insects. Deer are often observed on the refuge feeding on underwater plants while avoiding insects. The net impact to wolves from the proposed action is neutral. Wolves will not be affected by the restoration proposed.

Bald Eagles:

Eagles have nested on the C-3 Pool for many years. The proposed action will maintain wildlife values and water levels in C-3 Pool. The pool will receive priority in the distribution of water as necessary to maintain levels required to support fish populations utilized by eagles and loons. There will be no affect or impact on bald eagles from the proposed action.

4.1.4 Cultural Resources/Paleontological Resources

There are no known cultural/paleontological resources that will be affected by the proposed action except the function of Walsh Ditch which was dug in 1915. The Ditch represents early developer's attempts to drain the area for agriculture. The proposed action will fill in portions of the Ditch and stop its function. Ground disturbing activities beyond existing dikes and spoil banks are limited to fill in the old Walsh Creek streambed at the proposed Walsh Creek structure.

Cultural Resources that will be affected by the proposed action involve activities that affect a designated Wilderness Area. Actions in the proposed alternative that will impact the Wilderness include:

-stopping the discharge of water (at Site 5) from C-3 Pool into Walsh Ditch, which will stop the annual erosion along 6 miles of Ditch banks within the Wilderness Area.

-restoration of historic flows in Marsh Creek south of C-3 Pool, which is the east boundary of the Wilderness Area.

-physical (bulldozer & excavator) restoration of the Marsh Creek channel at Wilderness Boundary (Site 7) that would involve a ditch plug and a channel being excavated to connect the stream channel to itself.

-ditch plugs which will be installed within the Wilderness Area between Sites 7 & 8 and Sites 7 & 9.

In evaluating the impacts of a proposed action on a Wilderness Area, the USFWS has adopted a policy to evaluate the impacts. USFWS policy is to comply with a "Minimum Requirement Decision Guide" that provides for an analysis of projects that affect Wilderness. The Guide is a two step process that provides consistency in the way project proposals in Wilderness are evaluated.

Part one of the evaluation is a series of questions that helps to determine if the proposed action is really the minimum required action in wilderness. Part two of the process determines the minimum tool necessary to accomplish the project.

Minimum Requirement Decision Guide

Step 1 - Determining the Minimum Requirement

Part A.

1. Is this an emergency? No.

2. Does the project or activity conflict with the stated wilderness goals, objectives, and desired future conditions of applicable legislation, policy and management plans? No.

The project will help restore the wilderness areas " primeval character and influence, without permanent improvements or human habitation," which is protected and "managed so as to preserve natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." The Wilderness Act does provide for an exception (Sec 4(c)) that permits the use of motorized equipment "as necessary to meet minimum requirements for the administration of the area for the purpose of this Act." The proposed action is needed to manage the area to preserve natural conditions as described above and to meet the minimum requirement for administration of the area.

3. Are there other less intrusive actions that should be tried first? No.

The Ditch either continues to function and drain the Wilderness Area or its drainage function is stopped. Beaver dams have not been able to stop groundwater discharge in most sections of Walsh Ditch. In stopping spring discharge of water out of C-3 Pool (Site 5), beaver may be more successful in damming groundwater discharge in Walsh Ditch. Before ditch plugs are installed between Sites 7 & 8 and 7 & 9 within wilderness, beaver will be given two years to stop groundwater loss. During the period, ditch plugs in Walsh Ditch outside Wilderness will be evaluated for their effectiveness. The ditch plug at Site 7, in Wilderness, is necessary to continue stream flow restoration in Marsh Creek.

4. Can this project or activity be accomplished outside of wilderness and still achieve its objectives? No.

Most activities proposed are either outside of Wilderness (i.e. Site 5 & 6) or are on the Wilderness boundary (Site 7). The only activities proposed within the Wilderness are ditch plugs covered in question 3 above.

5. Is this project or activity subject to a valid existing rights? No.

There are no mining claims, rights-of-way or other easements involved.

6. Is there a special provision in legislation that allows this project or activity? No.

Part B. Determining the Minimum Requirement

1. How does the project benefit the Wilderness as a whole as opposed to maximizing one resource?

The Wilderness as a whole benefits in returning natural stream flows to Marsh Creek and stopping the erosion and groundwater loss in Walsh Ditch. The proposal moves the Wilderness closer to being "affected primarily by the forces of nature" with the imprint of man's work less

"noticeable." Although the imprint of the Ditch cannot be practically removed, its draining function can be stopped.

2. If this project were not completed, what would be the beneficial and detrimental effect to the wilderness resources?

See this environmental assessment for beneficial and detrimental effects of both the preferred alternative and the no action alternative.

3. How would the project help ensure that human presence is kept to a minimum and that the area affected primarily by the forces of nature rather than being manipulated by humans?
The discharge of water at Site 6 out of C-3 Pool into the historic Marsh Creek Channel will match spring runoff entering C-3 Pool and will match the force of nature (spring runoff). At times water may be held in C-3 Pool and discharge in Marsh Creek may not match inflows. Although flows in Marsh Creek will be manipulated by humans, stream flows in the historic channel will be much closer to natural forces than exists with current management utilizing the Walsh Ditch.

Management plans for C-3 Pool will annually consider maintaining flows in Marsh Creek whenever possible. Wildlife values in C-3 Pool will receive water priority as identified in annual water management plans.

4. How would the project ensure that the Wilderness provides outstanding opportunities for solitude or a primitive and unconfined type of recreation?

The project will have no effect on recreational activities or experiences. There should be an enhanced experience seeing a stream flowing in its historic channel vs. water flowing down a drainage ditch.

5. What does your management plan, policy, and legislation say to support proceeding with this project?

USFWS policy and all legislation fully support and encourage this project.

6. How did you consider Wilderness values over convenience, comfort, political, economic or commercial values while evaluating this project?

It would have been much less complex to replace the water control structure at Site 5 with a similar structure and continue water management of the two watersheds as had been done since 1942. Maintaining water flow in the Walsh Ditch simplifies water movement across the landscape - at a great natural resource cost as described in this assessment. A decision was made to use a landscape watershed approach in restoring water flowing across the refuge to as close to natural conditions as possible. Walsh Ditch has caused considerable damage to the two

watershed affected in the last 86 years. While some of the damage is not reversible, some values can be restored.

The two primary policies used to develop the proposed action are compliance with USFWS policy on Wilderness Management and compliance with the Refuge System Improvement Act of 1997.

Step 2 Determining the Minimum Tool

At a minimum three alternative approaches need to be considered:

1) Alternative 1: use of motorized equipment
2) Alternative 2: use of non-motorized equipment
3) Alternative 3: variations of alternatives 1 & 2

A description of the affected environment is included in this assessment. The preferred alternative involves connecting the historic Marsh Creek channel to itself at Site 7 and ditch plugs between Sites 7 and 8 and Sites 7 and 9. See Appendix 3 for a map of Site 7.

Spring high flows have caused the original 20-foot wide 7-foot deep Walsh Ditch channel to erode to a 60-foot wide channel up to 15 feet lower than the surrounding land surface. In order to plug the Ditch and return flows to the historic Marsh Creek channel, several hundred yards of material must be moved to plug the ditch. A ditch plug at Site 7 is required to direct water into Marsh Creek and back out of Walsh Ditch. The only practical tool to use in plugging the Ditch is a bulldozer and excavator. The use of non-motorized equipment is not a realistic option and any variation of motorized and non-motorized equipment is also not realistic.

4.1.5 Environmental Justice

The Executive Order 12898 on Environmental Justice issued by President Clinton on February 11, 1994, requires all federal agencies to assess the impacts of federal actions with respect to environmental justice. The Executive Order states that, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high and adverse impacts as a result of a proposed project.

Due to the rural nature of the proposed restoration sites, the surrounding population tends to be in lower income categories, but no identifiable group of individuals can be considered to have lower income in relation to local averages. None of the potential restoration areas have any known concentrations of minority populations in the vicinity of the proposed restoration sites. The impacts of Alternative A and C on human activities in the areas surrounding restoration sites are expected to be minimal, and so do not represent any disproportionate high and adverse impacts to low-income and minority groups.

4.2 Alternative B (No Action)

4.2.1 Habitat Impacts

Management of the water resources of the C-3 Pool watershed in the same manner as has been practiced for the past 60 years would result in:

-lowered groundwater levels from the continued functioning of the Walsh Ditch.

-continued conversion of wetland plant communities to dryer site plant communities.
-continued damage to organic soils from dryer conditions resulting in the oxidation of soil and an increase in the soils susceptibility to wildfire damage and loss.

-severe erosion of organic soils and subsurface sands due to the power of the water discharged into Walsh Ditch at C-3 Pool.

-continued flushing of large quantities of sand into the Manistique River from the Walsh Ditch outflows via Duck Creek.

-maintaining the function of a significant drainage ditch in a designated Wilderness Area that is also a National Natural Landmark because of its unique wetland values i.e. the Strangmoor Bog National Natural Landmark.

- continued management of flows in the Driggs River that are approximately ½ of historic spring flows.

-to continue the C-3 Pool water management actions of the past would not be in compliance with the Refuge System Improvement Act of 1997, which directs the Secretary of Interior to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans."

4.2.2 Biological Impacts (No Action)

Biological impacts of no action are the opposite of the impacts described in the proposed action 4.1.2. and involve:

-a continued lack of beaver activity in the drained creek channels with a loss of potential habitat for waterfowl, bitterns, rails and sandhill cranes.

-in the Driggs River gravel spawning beds for brook trout will remain covered with sand.

-the Driggs River will continue to be a regulated stream lacking its historic power to cut and deposit the sand bedload present.

-the riparian zone of the Driggs River will not flood.

- wet open sedge grassland wildlife species will continue to decline as the conversion to dryer sites continue.

-nesting habitat for wood turtles in the Driggs River floodplain will continue to be in short supply.

4.2.3 Listed Species (No Action)

Gray Wolf

There would be no impacts to wolves from the no action alternative. Whitetail deer habitats along the Walsh Ditch, Marsh and Walsh Creeks would not be affected. Beaver numbers would continue to be low.

Bald Eagle

There would be no impact to eagles from the no action alternative.

4.2.4 Cultural Resources/Paleontological

No impacts would be expected from a no action alternative.

4.2.5. Environmental Justice

See section 4.1.5 page 23.

4.3 Alternative C

4.3.1 Habitat Impacts

All habitat impacts anticipated in the proposed action are included in this alternative. Additional impacts beyond the proposed alternative involve complete physical removal of the Walsh Ditch below C-3 Pool. In areas where spoil banks exist, the spoil would be used to fill in the Ditch. In those areas where there are no spoil banks present, steel sheet piling would be used to stop all groundwater discharge. Impacts from the alternative include:

-the reduction to zero of all groundwater discharge flowing down the Walsh Ditch, including the spreads area below C-3 Pool.

-groundwater levels returning to historic levels along the Ditch.

-a possible return of the historic patterned wetland nature of vegetation east of the Ditch.

-steel sheet piling and construction activities stopping all ground water discharge flows and filling in the Ditch would leave long-lasting scars of human activity in the designated Wilderness Area. Such activity may be the minimum action necessary to stop all groundwater loss to the Ditch.

4.3.2 Biological Impacts

All biological impacts anticipated in the proposed action are included in this alternative. Additional impacts on biological resources from this alternative include:

-improved conditions for species dependent on open wet habitats such as northern harriers, sedge wrens, yellow rails, Leconte's sparrows, sandhill cranes and sharptail grouse.

-plant communities may return to a historic patterned condition.

4.3.3 Listed Species

No additional impacts would be anticipated from this alternative beyond those identified in the proposed action (4.1.3).

4.3.4 Cultural/Paleontological Resources

There are no known paleontological resources that will be affected by this alternative in addition to the proposed action 4.1.4.

Cultural resource impacts involve activity in a designated Wilderness Area. The Wilderness Act requires the "imprint of man's work be substantially unnoticeable" in Wilderness. Steel sheet piling dams may be more noticeable than a drainage ditch. Actions to install the sheet piling would involve bulldozers and excavators well within the Wilderness interior.

4.3.5 Environmental Justice

See section 4.1.5. page 23.

4.4 Summary of Environmental Consequences by Alternative

Table 2. Summary of Environmental Consequences by Alternative.

Impacts	**Alternative A Proposed Action**	**Alternative B (No Action)**	**Alternative C**
Groundwater Levels	Restored to natural, except in spreads	Drained below natural	All restored to natural
Wetland Plan Communities	Restores wetland conditions	Dryer, drained communities	Restores wetland conditions
Soil Loss (oxidation and wildfire)	Restores groundwater to soils	Continued soil loss	Restores groundwater to soils
Sheet Flow	Restores surface flows	Ditch intercepts	Restores surface sheet flows
Seasonal Flooding Driggs River	Flooding episodes return	Regulated river	Flooding episodes return
Brook Trout Driggs River	Enhanced	Moderate to poor	Enhanced
Erosion of Sand into Manistique River	Reduced erosion	Severe erosion	Reduced erosion
Beaver Dam Activity	Increase	Suppressed	Increase
Threatened and Endangered Species	No effect	No effect	No effect
Wilderness Conditions	Restores natural processes	Drained by a ditch	Restores natural process with physical scars left (Sheet Piling)
Biological Integrity Diversity, Environmental Health	Restored	Degraded	Restored
Wetland Wildlife values C-3 Pool	Maintains	Maintains	Maintains

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Comments on the environmental assessment were sought from the public with a news release (appendix 5). Only two comments were received. One comment involved a concern that the project could affect sport fishing on C-3 Pool. The other comment was one of general interest.

Wilderness Watch

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May 15, 2001

Mike Tansy
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Dear Mr. Tansy,

Wilderness Watch appreciates this opportunity to submit the following comments on the environmental assessment for restoration of Marsh and Walsh Creeks on the Seney National Wildlife Refuge.

Wilderness Watch is a national conservation organization dedicated to oversight regarding the careful stewardship of areas within the National Wilderness Preservation System and Wild and Scenic Rivers System. Our staff and Board of Directors have decades of experience in wilderness management and advocacy. We strive to monitor the management of every wilderness and wild river in the system. Our purpose is to ensure that the wilderness character of these special places is protected and preserved.

We are very impressed with the quality of this EA in terms of its attentiveness to the wilderness resource. We also appreciated the clear and detailed explanation of how watershed conditions on the refuge are being negatively impacted by the Walsh Ditch. We are especially pleased that the EA included a minimum requirements analysis for the proposed action. Such an analysis is critically useful in reviewing whether a proposed action is *necessary* within wilderness, and which management techniques would best limit or avoid negative impacts to the area's wilderness character.

Managing designated wilderness is a complex challenge that requires interdisciplinary flexibility and awareness of both tangible and intangible qualities of the wilderness resource. In this EA the Seney National Wildlife Refuge has demonstrated a sincere appreciation and concern for the wilderness qualities within the Seney Wilderness.

Wilderness Watch strongly supports the proposed action (Alternative A). The Walsh Ditch is an ongoing threat to a variety of refuge resources including groundwater, plant and wildlife diversity, riparian habitat, wilderness, and the natural processes of two stream channels. The visual scar and continued functioning of the ditch drastically impact the Seney Wilderness by prominently manipulating and hindering the area's natural hydrological processes. Although the Wilderness Act does not require removal of all signs of past human influence following wilderness designation, the Act does intend that natural processes will prevail and remain untrammeled by human manipulation once an area is designated by Congress as wilderness. Restoring natural streamflows to two creeks and eliminating usage of the Walsh Ditch will strongly benefit many biophysical resources and wilderness qualities on the Seney Refuge, and begin to heal the damage that is presently occurring.

Wilderness Watch understands and agrees that it is important to stabilize water losses along the several miles of ditch that are within wilderness, between sites 5 and 9 (see map Appendix 1, EA). Since it is important to halt the damage that is occurring to the area's wilderness character, we support the use of mechanized equipment at site 7 along the wilderness boundary as the minimum tool necessary to reconnect the Marsh Creek stream channel so that natural stream processes can once again resume.

For the remaining portions of ditch located within the wilderness, we are extremely pleased with the careful attention that was given to selecting the "minimum tool" for halting groundwater loss We applaud the proposal to wait a few years before taking any further intrusive actions within wilderness so that beavers have an opportunity to recolonize and stabilize the segments of ditch that are within wilderness, including the highly eroded area known as the "spreads." As natural water flows are returned to Marsh and Walsh Creeks, the substantially reduced water volume in the ditch may allow beavers to successfully build dams that won't be washed away, thereby creating natural capture pools that function very well to preserve the area's groundwater table.

However, we ask that the beavers be given longer than two years to accomplish this important task. We suggest waiting up to five years before judging whether water losses have successfully been halted due to beaver activity. The ditch has been actively draining the region for 85 years; the refuge can therefore afford to wait a couple extra years to give natural reclamation a chance, before deciding to hastily rush into designated wilderness with motorized or mechanized equipment and thereby negatively impact the area's wilderness character perhaps unnecessarily. Section 4(c) of the Wilderness Act specifically prohibits motorized equipment and mechanical transport within wilderness except as *necessary* to meet *minimum* requirements for protecting and administering the area as wilderness. Managers must therefore meet the tests of "necessity" and "minimalism" before undertaking generally prohibited actions within wilderness. Giving the beavers five years instead of two years for resource stabilization reclamation is not an unreasonable means of discovering and demonstrating whether motorized actions may truly be the minimum necessary.

If the beavers are not successful in reclamation of the ditch, then Wilderness Watch supports the plan to construct several earthen plugs in the ditch within wilderness to halt the loss of groundwater. Due to the importance of preventing further damage to the area's biophysical resources, Wilderness Watch will support the one-time use of motorized or mechanized equipment within the wilderness for purposes of constructing the earthen plugs if such action becomes necessary. We favor the use of earthen plugs rather than steel sheet pilings because earthen plugs would be less visually intrusive and could use soils available onsite rather than a technologically produced material such as steel. Since steel is an artifact of civilization, it fits less well in a wilderness context than does a simple earthen plug.

If plugs are eventually deemed necessary, we urge that only onsite soil be used for their construction. We strongly caution against bringing in fill-dirt from elsewhere due to the hazard of non-native weed contamination. In addition, transport of the fill dirt through the wilderness could require expanded motorized access that would negatively impact wilderness character. If the use of off-site fill dirt is a possible consideration, then the EA will need to be amended to analyze the potential environmental impacts and possible mitigation measures.

Thank you for this opportunity to comment on stream restoration and wilderness protection on the Seney National Wildlife Refuge. Wilderness Watch looks forward to receiving any further planning updates and to reviewing the final decision. Please keep us on your mailing list for any other actions affecting the Seney Wilderness. If you have any questions concerning our comments, please don't hesitate to contact us.

Sincerely

TinaMarie Ekker

TinaMarie Ekker
Policy Director

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APPENDICES

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